- 6 -

Remarks

This application has been reviewed in light of the nonfinal Office Action of December 4, 2006. Claims 1-21 are pending. Claims 6-10 and 16 are objected to, and claims 1-5, 11-15, and 17-21 are rejected. In response, the following remarks are submitted. Reconsideration of this application, as amended, is requested.

The objected-to claims are not written in independent form at this time, because it is believed that all of the claims will be allowable in light of the following remarks.

Ground 1. Claims 17-21 are rejected under 35 USC 102 as anticipated by Hou US patent 6,596,979. Applicant traverses this ground of rejection.

The following principle of law applies to sec. 102 rejections. MPEP 2131 provides: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ... claim. The elements must be arranged as required by the claim..." [citations omitted] This is in accord with the decisions of the courts. Anticipation under section 102 requires 'the presence in a single prior art disclosure of all elements of a claimed invention arranged as in that claim.' Carella v. Starlight Archery, 231 USPQ 644, 646 (Fed. Cir., 1986), quoting Panduit Corporation v. Dennison Manufacturing Corp., 227 USPQ 337, 350 (Fed. Cir., 1985)

Thus, identifying a single element of the claim which is not disclosed in the reference is sufficient to overcome a Sec. 102 rejection.

The explanation of the rejection focuses on the embodiments of Figures 2-3 and Figure 10 of Hou, discussed at col. 9, line 52 et seq. Applicant will direct the remarks primarily to these embodiments as well.

Claim 17 recites in part:

- 7 -

"cooperatively analyzing the output signals from at least two spatially adjacent array subelements

to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements, and

to reach a conclusion from the data set as to a location of the image of the feature on the segmented array."

The explanation of the rejection (last full paragraph on page 2 of the Office Action) suggests that this limitation is disclosed in relation to Figures 2A-2B, 3, and 10, and at col. 5 lines 27-35; col. 5, lines 48-57; and col. 5, lines 57-60 of Hou. Applicant respectfully disagrees. Col. 5, lines 27-35 discloses the formation of the signal. Col. 5, lines 48-57 discloses the integration of the data. Col. 5, lines 57-60 discloses the readout of the image. The Figures are in support of these disclosures.

Nowhere in this discussion, or elsewhere in Hou, is there any mention of the terms or the concept of "produced from exactly one or from more than one" as recited in claim 17.

The hardware structure illustrated in Figures 2A-2B and 3 has no capability for determining whether an output signal responsive to the image is produced from exactly one or from more than one adjacent array subelement. The discussion of the logic at col. 5, lines 48-60 discloses sampling each photodetector individually. There is no mention of any further sampling device or logic for determining whether exactly one or more than one of the adjacent photodetectors is producing an output signal This portion of Hou discloses only the accumulation of signal data, but does not suggest that there should be a cooperative analysis of "a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements".

The explanation of the rejection quotes the present claim language, but does not identify what specific language in the referenced portion of Hou leads the Examiner to conclude that any logic of Hou would "establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly

- 8 -

one or from more than one of the adjacent array subelements".

Applicant has again carefully studied the figures and disclosure of Hou referenced in the explanation of the rejection. Applicant can see nothing in the referenced text or drawings stating that Hou somehow analyzes its data to decide that output signals come from one or from more than one of the adjacent array subelements. The Figures 2A-2B disclose the sensing structure and logic of Hou, but not any analyzing of the sensed data. Figure 3 depicts the hardware layout of sensor elements and the gathering of data, but again with no illustration of data analysis. Figure 10 shows a staggered array of sensor elements. A fair reading of col. 5 lines 27-35; col. 5, lines 48-57; and col. 5, lines 57-60 of Hou does not reveal any discussion of "cooperatively analyzing the output signals from at least two spatially adjacent array subelements to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements".

The explanation of the rejection focuses on one specific portion from Hou as disclosing the "cooperatively analyzing" limitation: col. 5, lines 48-57 (see Office Action, 4-8 lines from bottom of page 2). Applicant quotes col. 5, lines 48-57 in its entirety:

> "Fig. 3 illustrates an exemplary layout of sensor elements with associated image signal processing electronics 300. Photodetector array 302 comprises a single row of N photodetectors and each is labeled #1, #2,....#N. During a scanning operation, each of the photodetectors collects image lights cast thereon for an integration period and generates an electronic signal. At the end of the integration period, the electronic signals are amplified in an amplifier array 304 and sampled respectively via a sampling circuit array 306."

This passage describes collecting data from each photodetector for an integration period, and the resulting integrated signal for each detector is sampled and multiplexed into an amplifier. This is a description of the early stage of data gathering. Any logic

- 9 -

applied to the signals comes downstream from that point. This portion of Hou is unrelated to the quoted language of claim 17.

Applicant also carefully studied the Response to Argument of the present Office Action, hoping to find this point, discussed at length in the Remarks of the prior Response to Office Action, addressed. It was not.

Claim 20 recites in part:

"...the step of forming an image includes the step of forming the image having a diameter of one blur diameter"

Hou has no such disclosure, because Hou does not disclose blur diameters and because Hou does not disclose forming an image having a diameter of one blur diameter.

The Office Action argues that the limitations of claim 20 are found in Figures 9A-9B and at col. 9, lines 21-24 of Hou. There is no mention of blur diameters or one blur diameter at these locations or elsewhere in Hou. The terms "blur" and "blur diameter" do not appear at all in Hou. Applicant asks that the Examiner explain exactly what terminology or concept from Hou is said to constitute a disclosure of "blur diameter" as recited in claim 20.

Claim 21 recites in part:

"each detector subelement overlaps each of two adjacent detector subelements along their lengths by an amount that is responsive to the blur diameter"

The Office Action argues that the limitations of claim 21 are found in Figure 10 of Hou. There is no mention of blur diameters or one blur diameter at this location or elsewhere in Hou. The terms "blur" and "blur diameter" do not appear at all in Hou. Applicant asks that the Examiner explain exactly what terminology or concept from Hou is said to constitute a disclosure of "blur diameter" as recited in claim 20.

Applicant asks that the examiner reconsider and withdraw this ground of

- 10 -

rejection. If it is maintained, Applicant asks that the Examiner point out the exact language of Hou that is said to disclose "cooperatively analyzing the output signals from at least two spatially adjacent array subelements to establish a data set reflective of an extent to which output signals responsive to the image of the feature are produced from exactly one or from more than one of the adjacent array subelements". Such language certainly is not found at Figures 2A-2B, 3, and 10, and at col. 5 lines 27-35; col. 5, lines 48-57; and col. 5, lines 57-60 of Hou. Applicant also asks the Examiner to indicate what concept or term in Hou is interpreted as the "blur diameter" recited in claims 20-21, because that term "blur diameter" does not appear in Hou.

Ground 2. Claims 1-4 and 11-15 are rejected under 35 USC 103 over Hou '979 in view of Confal US Pub. 2003/0053221. Applicant traverses this ground of rejection.

MPEP 2142, under ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS, provides: "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [citations omitted]. See MPEP para 2143-2143.03 for decisions pertinent to each of these criteria."

First requirement--there must be an objective
basis for combining the teachings of the references

The <u>first of the requirements of MPEP 2142</u> is that "there must be some

- 11 -

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings". The present rejection is a sec. 103 combination rejection. To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2142, 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte Levengood, 28 USPQ2d 1300 (Board of Appeals and Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

> "The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

> "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

> "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there

- 12 -

is some teaching, suggestion, or motivation to do so found either in the
references themselves or in the knowledge generally available to one of
ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596
(Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir.
1992)."

* * * * *

"The mere fact that references can be combined or modified does
not render the resultant combination obvious unless the prior art also
suggests the desirability of the combination." In re Mills, 916 F.2d 680,
16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the
claimed invention would have been 'well within the ordinary skill of the
art at the time the claimed invention was made' because the references
relied upon teach that all aspects of the claimed invention were
individually known in the art is not sufficient to establish a prima facie
case of obviousness without some objective reason to combine the
teachings of the references. Ex parte Levengood, 28 USPQ2d 1300
(Bd.Pat.App.& Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the
references in the manner used by this rejection, and selecting the helpful portions from
each reference while ignoring the unhelpful portions. An objective basis is one set forth
in the art or which can be established by a declaration, not one that can be developed
in light of the present disclosure.

Hou and Coufal deal with entirely different things. Hou teaches photodetectors
upon which a scene is imaged. In the specific case of most interest to Hou, the scene
is a paper-based object, such as text and graphics, that is to be imaged in a flat-bed
scanner or the like. (See for example col. 1, lines 22-25 and col. 2, lines 57-59.) Coufal
deals with an entirely different subject, the tailoring of a beam of light produced by a
laser or other collimated light source having a Gaussian transverse intensity distribution.

- 13 -

(See, for example, para. [0003]-[0011], [0014]-[0017], and claim 1) There is absolutely no reason to believe that light from a scene, such as imaged by Hou, is in the form of a beam having a Gaussian intensity distribution such as discussed by Coufal. Of course, it is not in such a form. If the rejection is maintained, Applicant asks that the Examiner provide the factual support for the assertion that the light from a scene is a beam with a Gaussian transverse intensity distribution, as required by Coufal.

Further, in this case, the stated premise for the combination (Office Action, page 5, lines 2-5) is factually incorrect. The premise is that "Coufal discloses...blur-circle image having a blur diameter based on its optics system (paragraph 0089, lines 1-4)." There is no mention of blur-circle image or blur-circle diameter at this location or elsewhere in Coufal. The word "blur" does not appear in Coufal. Further, as noted in the prior paragraph, the teaching of Coufal for tailoring the transverse intensity distribution of a light beam from a laser has nothing to do with the photodetector of Hou.

If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference. Applicant is particularly interested to know how the principles of tailoring the transverse distribution of a Gaussian-distribution laser beam is applicable to the imaging approach of Hou. Thus, as it stands now, the invention as a whole is not prima facie obvious over the combined teachings of the prior art.

Second requirement--there must be
an expectation of success

The second of the requirements of MPEP 2142 is an expectation of success. There is no expectation of success...This requirement has not been addressed in the explanation of the rejection, and in any event more than Examiner's argument is required here. Applicant will be interested to consider the argument for success in light

- 14 -

of the completely different purposes of the technologies of Hou and Coufal.

As stated in MPEP 2142, "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [citations omitted]."

Third requirement--the prior art
must teach the claim limitations

The third of the requirements of MPEP 2142 is that "the prior art reference (or references when combined) must teach or suggest all the claim limitations." In this regard, the following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

The explanation of the rejection focuses on the embodiments of Figures 2-3 and Figure 10 of Hou, discussed at col. 9, line 52 et seq. Applicant will direct the remarks primarily to these embodiments as well.

Each of claims 1 and 13 recites in part:

"an optics system that images a point feature of a scene at an image plane as a blur-circle image having a blur diameter"

The explanation of the rejection of claim 1 spanning pages 4-5 of the Office Action has a long discussion of what Hou is said to teach in terms of blur diameters.

- 15 -

In the midst of this discussion, at 2-3 lines from the bottom of page 4, the explanation states "Hou does not explicitly disclose that the optics system that images a point feature of a scene at an image plane as a blur-circle image having a blur diameter." In point of fact, Hou does not explicitly or implicitly disclose anything about blur diameters or the concept of blur diameters. The discussion at col. 10, lines 12-18 is not related to blur diameter, but simply a statement of the size of the scanning dot.

Accordingly, the long discussion prior to this point of the explanation of the rejection is nothing but a paraphrasing of the recitation of claim 1. It is unrelated to anything that is taught by Hou. There is no disclosure in Hou of "an optics system that images a point feature of a scene at an image plane as a blur-circle image having a blur diameter". Hou has no teaching of any of this argued material found at page 4, lines 4-19 of the Office Action.

Claim 1 further recites in part:

"...the detector array is a one-dimensional detector array comprising a plurality of detector subelements each having a width of from about 1/2 to about 5 blur diameters, and a length of n blur diameters,..."

The detector array disclosed in Figure 10 and discussed at col. 9, lines 52 et seq. is a two-dimensional detector array, not a one-dimensional detector array as recited in claim 1.

The explanation of the rejection asserts that this limitation is disclosed at col. 10, lines 12-18 of Hou. There is no such disclosure at this location or any other location of Hou. Applicant has carefully read col. 10, lines 12-18, and finds not even a remote suggestion of such a limitation. This portion of Hou says nothing about the dimensions of detector elements relative to the diameters of the circles 960, 968, and 970 or relative to blur diameters. Col. 10, lines 12-18 of Hou observes that when one of the circles overlaps three photodetectors in Figure 10, it overlaps three photodetectors so that each of the three photodetectors generates an output signal.

Further, Hou makes it very clear that there is no attempt to describe or illustrate the scanning dots 960, 968, 970 as having any particular size or dimensions relative to

- 16 -

the detector sizes. Hou states that "It should be noted that scanning dot 960, 968, and 970 are for illustration only" and states that the each scanning dot "corresponds to a group of photodetectors". (col. 10, lines 13-18) These statements must be read in conjunction with Hou's disclosure that "the arrangement of rows of photodetectors is made in such manner that at any exposure, three colored photodetectors will be exposed." (col. 9, line 67-col. 10, line 2) As long as the scanning dot overlaps three colored photodetectors at some point, Hou's disclosure is met.

The Office Action argues that the structure shown in Figure 10 is a one-dimensional array. No, it really is not. If the examiner will look at Figure 10, he will see that it is a two-dimensional array. The two-dimensional array may be described as an assembly of staggered one-dimensional arrays, but in totality it is a two-dimensional array.

In short, Hou presents no concept of the size of photodetectors in relation to a blurred point image. The reading of Hou in the explanation of the rejection is made only in light of the present disclosure, which takes a much more sophisticated approach to the designing of photodetector dimensions in relation to the blurred image produced by the optics system.

Claim 1 further recites in part:

"wherein an overlap of each of the two adjacent detector subelements is m blur diameters and a center-to-center spacing of each of the two adjacent detector subelements is n_0 blur diameters, wherein n is equal to about 3m and m is equal to about $n_0/2$."

Although the explanation of the rejection argues at page 3, lines 5-11 that this limitation is somehow disclosed in Hou, there is no such disclosure for several reasons. First, Hou does not disclose a blur diameter at all, in any context. Second, Hou discusses the overlap of adjacent photodetectors in terms of the size of the photodetector, not in terms of blur diameters. Third, Hou has no mention of the spacing of adjacent detector subelements in terms of blur diameters.

The first full paragraph on page 10 of the Office Action references col. 9, lines

- 17 -

59-61. This portion of Hou says that each row of the staggered two-dimensional array of Hou shown in Figure 10 is staggered by 1/2 of the detector size. This has no relation to a blur diameter of a point image on the detector, but instead is related only to the detector dimension.

Coufal is relied upon for a teaching "that the optics system that images a point feature of a scene at an image plane as a blur-circle image having a blur diameter based on its optics system (paragraph 0089, lines 1-4)." That is not a correct statement of what Coufal teaches, either at paragraph 0089, lines 1-4, or elsewhere. Nor is Coufal's teaching properly combined with that of Hou for the reasons stated earlier, unless the Examiner can show that the scene imaged by Hou is a beam with a Gaussian transverse intensity distribution. Any attempt to import the concept of a blur diameter from Coufal into Hou is baseless otherwise.

Regarding claims 2-4, Hou does not mention these recited relationships or a blur diameter in any manner, nor is there any teaching in the references like that stated in the explanation of the rejection. The explanation of the rejection presents a restatement of Applicant's claim language.

Claim 13 further recites in part:

"...detector subelements are sized responsive to the blur diameter..."

Hou does not disclose a blur diameter, and certainly does not disclose or suggest that the photodetectors are sized in any manner responsive to a blur diameter.

Ground 3. Claims 1-5 are rejected under 35 USC 103 over Carnall US Patent 5,065,245 in view of Hou '979 and further in view of Coufal US Pub. '221. Applicant traverses this ground of rejection.

Applicant incorporates from the discussion of Ground 2 the legal requirements for a sec. 103 rejection.

- 18 -

First requirement--there must be an objective
basis for combining the teachings of the references

In this case, the teachings of Hou cannot be combined with those of Carnall due to the different geometries and analytical procedures taught by the two references. If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference. Thus, as it stands now, the invention as a whole is not prima facie obvious over the combined teachings of the prior art.

At the bottom of page 7 of the Office Action, it is argued that combining the teachings of these two references would "provide a reliable means of focusing and aligning image onto the photodetector array". No location is referenced for this assertion, and Applicant cannot find any such claim in Hou. Further, there is no reason to believe that Carnall needs such a means, or that the approach of Hou would provide such a feature to Carnall's structure. If the rejection is maintained, Applicant asks that the Examiner indicate where this asserted teaching of "reliable means of focusing and aligning image onto the photodetector array" is found in either reference.

Further, there is no basis for adding in the teachings of Coufal. Applicant incorporates the discussion of the different technologies of Hou and Coufal from the Ground 2 discussion. This point applies here as well, and to the attempt to combine teachings of Coufal with those of Carnall. Carnall also deals with a sensor, not the tailoring of a Gaussian-distribution laser beam.

Second requirement--there must be
an expectation of success

This requirement is not addressed in the explanation of the rejection.

- 19 -

Applicant incorporates its prior discussion of this requirement.

Third requirement--the prior art
must teach the claim limitations

Claim 1 recites in part:

"an optics system that images a point feature of a scene at an
image plane as a blur-circle image having a blur diameter;"

Neither reference teaches or even mentions "blur-circle image" or "blur
diameter" at all, in any way. If the rejection is maintained, Applicant asks that the
examiner indicate the precise source in Carnall for these teachings.

Claim 1 further recites in part:

"the detector array is a one-dimensional detector array comprising a plurality
of detector subelements each having a width of from about 1/2 to about 5 blur
diameters, and a length of n blur diameters,"

None of the references teach these limitations. The explanation of the
rejection asserts that Carnall teaches these limitations, but points to no location in the
reference as a source of the teachings. If the rejection is maintained, Applicant asks
that the examiner indicate the precise source in Carnall for these teachings.

Claim 1 further recites in part:

"wherein an overlap of each of the two adjacent detector
subelements is m blur diameters and a center-to-center spacing of each
of the two adjacent detector subelements is n_0 blur diameters, and
wherein n is equal to about $3m$ and m is equal to about $n_0/2$."

- 20 -

Neither reference teaches these limitations. The explanation of the rejection asserts that Carnall teaches these limitations, but points to no location in the reference as a source of the teachings. If the rejection is maintained, Applicant asks that the examiner indicate the precise source in Carnall for these teachings.

In the first paragraph bridging page 8 of the Office Action, its the same thing. Quotations from the present claims instead of a discussion of what Carnall teaches, without any sources in Carnall. None of the references teach the limitations of claims 2-5.

Applicant asks that the Examiner reconsider and withdraw the rejections.

Respectfully submitted,
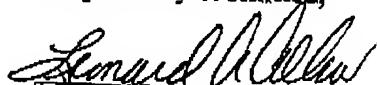
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